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## Q&A: Director Varmus On Woes and Strengths of NIH

*Harold Varmus, Director of the National Institutes of Health, spoke with SGR Editor Greenberg on September 20. Following is the text of the conversation, transcribed and edited by SGR.*

**SGR.** *With downsizing and budget limitations, can NIH retain its reputation as a great oasis removed from a lot of the stresses that afflict university-based science?*

**Varmus.** That's a struggle. But, I'm not sure that this was necessarily the happiest place ever.

**SGR.** *Legend says it used to be.*

**Varmus.** Twenty or thirty years ago, that was true. From the day I arrived here last year, there were lots of pockets of unhappiness, maybe even something larger than pockets. One of the things I feel is extremely important is to use the resources of NIH as magnets to attract some of the best people who are being trained in the academic sector. The tables have turned a little bit. When I was here as a trainee 25 years ago, there's no doubt that NIH was by far the most prominent biomedical-research institution in the country. The Vietnam War was providing the NIH with some terrific trainees [deferred from military service while at NIH].

Many of those who went through the training program then went out and seeded the medical schools and universities. And now there's certainly equal strength out there, if not greater in some cases. NIH at the moment is in the position of being able to offer positions to young investigators who come here and work in, I wouldn't call it a protected environment, but one that does offer somewhat more security. For that investigator who is more interested in continuing at the bench, developing a small lab group, not having teaching responsibilities, this is nirvana. We have to be sure that the people who get those opportunities are those who most deserve them.

**SGR.** *NIH is now at about \$11 billion a year, and many complaints are heard that it's inadequate. What would be optimal? Would \$2 billion more do it?*

**Varmus.** It's not the \$2 billion more. What you want is a growth rate. I've done that exercise before the Secretary [of Health and Human Services] to influence her budget planning. And what we came out with—the kind of growth rate that we'd like—is about 12 percent a year [NIH received about a 3.5 percent increase this year]. The way the NIH system works, if you gave us \$2 billion more, and that was it, it would mean that we had a lot of new grants, and that would increase our commitment base for the following year. So, it's much better to grow gradually. Then all the new grants are

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## House Probe Digs Deeper Into Academic Pork Barrel

While his fellow legislators indulged in another end-of-session round of "earmarking" federal millions for university labs back home, Congressman George Brown (D-Calif.) last month renewed his campaign to banish academic pork-barrelling as greedy and injurious to science.

In elective politics, the benefits of earmarking are so evident and great that there's no chance of stamping out the practice. But Brown, who has assumed the role of Congressional statesman of science, has persisted, to the cheers of the mainline science establishment, which views earmarks as a threat to its authority. And, using parliamentary wiles and persuasion, Brown has actually derailed some earmarks and embarrassed away others. The fiscal 1994 earmark haul

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## In Brief

Scheduled for November 21-22 at the National Academy of Sciences: a big White House-sponsored meeting on "short and long-term objectives in health, safety, and food R&D," with 200 "diverse stakeholders" in these areas invited to participate. The meeting is being organized by the Committee on Health, Safety, and Food R&D of the National Science and Technology Council, an appendage of the White House Office of Science and Technology Policy (OSTP). For information: Deborah Hanfman, Executive Office of the President, OSTP, Wash., DC 20500; tel. 202/456-6134; fax 202/456-6027.

The Pentagon's own medical school, the Uniformed Services University of the Health Sciences, Bethesda, Md., has survived another demolition attempt. Unwanted by the downsizing military, the school was zeroed out by the House. But, at the insistence of Senator Daniel Inouye (D-Hawaii), a longtime supporter, money was restored in conference last week.

Officials of 18 major social and behavioral science societies are urging Congress to crack down on NIH for delays in fulfilling legislative directives to pay more attention to these disciplines. A collective letter to Senator Edward Kennedy and Rep. Henry Waxman, Chairmen of key NIH legislative bodies, alleges a "glacial pace" in creating the NIH Office of Behavioral and Social Science Research, mandated by Congress 18 months ago, and says NIH skimps on appointing social and behavioral scientists to national advisory councils.

EPA plans to put more money into peer-reviewed, competitively awarded research grants, with the cash total rising to \$100 million by fiscal 1997, from \$22 million at present. Also in the works: 300 EPA graduate fellowships.

## ... Eager to Please Congress, DOE, EPA Aides Say

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totalled \$651 million, a one-year decline of \$112 million. The 1995 batch hasn't been counted up yet, but looks robust.

In his latest hearing, Brown got two senior executive-branch officials to concede that, out of fear of Congress, they routinely yield to earmarking directives that lack the force of law. The admissions came from Martha Krebs, Director of Energy Research in the Department of Energy, and Jon Cannon, Assistant Administrator for Administration and Resource Management in the Environmental Protection Agency. They and others testified September 21-22 before Brown's House Science, Space, and Technology Committee.

Both EPA and DOE have lamented earmarks as intrusions on their priorities by politically adept universities. DOE even provided Brown with a tally of the cuts it has made in ongoing programs to finance Congressionally dictated earmarks.

Asked whether they fund earmarks written into the subcommittee reports that accompany appropriations bills, both witnesses squirmed a bit. "We attempt to discern the intent of Congress," Cannon responded, with Krebs indicating DOE followed the same practice. Reminded that report language is merely advisory and not legally binding, both acknowledged that their agencies were understandably anxious to maintain good relations with their Congressional moneymasters—even at the price of earmarks that drain money from agency-approved projects.

"Do you fear retaliation from the appropriations committees?" Brown asked.

Krebs responded that in her one year on the job, she had not encountered retaliation.

Turning to Cannon, Brown asked him if he feared retaliation "deep down in your soul."

Cannon replied: "Deep down in my soul, I fear retaliation from many sources. But all agencies," he said, "want to cooperate with Congress."

Rep. Peter Barca (D-Wisc.) asked about the frequency of telephone chats on earmarks between officials of earmarked agencies and staff members of their appropriations subcommittees. Cannon said he didn't know how often such calls took place, but acknowledged they did occur. Krebs emphasized the importance of divining "Congressional intent," and said such talks helped.

Brown then went into a soliloquy about how universities alone are not to blame. The Administration and Congress, he said, collaborate on the process. And he jocularly suggested that as newly elected head of the California delegation, largest in the House, he was well situated to join the pork-barrel quest.

As in past productions on earmarks, Brown and his allies on the Committee used the occasion to slap around academic *apparatchiks* whose schools successfully conspired with their Congressmen to dip into the federal pot. Is this the best way to dispense scarce money for science? Brown demanded.

The only one who answered yes was the nation's leading champion and great beneficiary of the academic pork-barrel, John Silber, President of Boston University, who produced a 31-page harangue saying that earmarking was a proper and necessary antidote to domination of federal research funding by a handful of elite universities. "Indeed virtually all—and certainly the most strident—of the objections that have been raised against federal appropriations for new science facilities," Silber declared, "rest upon an argument that is redolent of the self-interest of this small, privileged group of well-heeled universities."

Taking on the argument that facilities should be awarded on the basis of merit determined by independent peer review, Silber denounced peer review as "a tightly knit old-boy network."

And he tweaked a leading academic opponent of earmarks, Joe Wyatt, Chancellor of Vanderbilt University (who was not present). Citing SGR's report of Vanderbilt's successful lobbying for a \$100-million exemption from the federal cap on tax-exempt bonds [SGR, December 1, 1993: "Shunning Earmarks, Vanderbilt Got Tax Favors"], Silber called Wyatt "disingenuous." Silber said Vanderbilt "had no qualms about seeking and accepting" special favors from Congress while denouncing others for doing the same.

Expounding on the scientific benefits financed by federal loot were William Ihlandfelt, Vice President for Institutional Relations, Northwestern University; Joseph D. Bloom, Dean of the School of Medicine, Oregon Health Sciences University, and Carol Aschenbrener, Chancellor, University of Nebraska Medical Center.

In unison, they argued that they turned to their Congressmen for help because they needed money for worthy projects and none was available from the federal agencies that support academic research. After Aschenbrener said the money went into the development of a first-class organ transplant center, Brown countered that quality wasn't the issue. Science must make wise use of scarce resources, Brown lectured the three witness-table captives, telling them peer review, rather than pork, is the best method.

They took their pummeling quietly and appeared pleased to go when Chairman Brown said he had had enough.

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## ... Neither AIDS Nor Anything 'Going Full Throttle'

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coming on in different years, rather than all coming on in a single year.

**SGR.** Still, \$11 billion is a lot of money.

**Varmus.** Yeah, it's a lot of money. But science is expensive, and we work in so many areas, and there's a lot of pressure on us to work even in areas where the topics are important but the scientific opportunities may be less great. For example, health-services research, where I think we have a responsibility to do some of that work. And it's not just a moral responsibility but a legislative responsibility. We do a lot in the area of communications, a rather large budget. And I consider that, again, to be our responsibility. We spend literally hundreds of millions in those areas. Again, there's no direct scientific return—they're services of a sort.

**SGR.** Do these services belong here? HHS is a big place.

**Varmus.** I think you can make a pretty strong argument that promulgation of scientific findings has a legitimate basis for being here. The access to scientific personnel who can be sure that what we send out is right is on hand. We do a lot of things that are very expensive—clinical trials. We certainly have an investment in every scientific opportunity that you and I can mention. But the depth of that investment is less than I would like in many areas. Things could move faster if we had more money. Even some of the best areas are undersupported. Even the genome project, to take something that people complain about because it's growing. There's very little doubt, from my conversations with people who do genome work, that we could make the sequencing portion go more quickly, we could make gene discovery go more quickly with more money. In structural biology, coming into its own in a very dramatic way at the moment, there's no doubt that things would go faster if we had more money for equipment and more support for outstanding groups.

**SGR.** Is AIDS going full throttle?

**Varmus.** I don't think anything is going full throttle. We obviously have a deep investment in AIDS. But you can see the tensions, because this year the AIDS budget not only didn't show an increase, it didn't keep up with inflation. And that's a first. The tension is apparent, because Bill Paul [Director, NIH Office of AIDS Research] came into this job with a dedication to changing the portfolio in a significant way, and that means bigger investments, especially in some of the fundamental-science aspects of AIDS, particularly immunological aspects, but also in virology. And that can only be done by making some sacrifices in the clinical trials.

**SGR.** Does the AIDS budget reflect a political shift?

**Varmus.** What was proposed by the Administration was a substantial increase. But our Appropriations Committees, though loving us in principle, were given too little to do what they wanted for all the programs they like. And they ended up giving us what seems like a substantial increase when you look at the dollars. But when you look at the percentage, we're not growing, for sure.

**SGR.** Do you have any expectation of things changing in two or three years?

**Varmus.** If we could get back up to 6 percent increases, even though it's not ideal, we'd feel that the wind was blowing in our direction. It's hard to achieve that. Every year we go forward under these ceilings, it's tougher. I think the next few years is going to be a process of belt tightening. One of the things I think it's important to remember is that there will come an end to this period. For whatever reason—mainly because I think science is so productive—there will be a swing of the pendulum.

**SGR.** Is it right to encourage young people into biomedical research when the future is so uncertain?

**Varmus.** The scientific opportunities are definitely there. And I think the fiscal situation will improve. That prediction is not based on any more than my conviction and feeling that the general enthusiasm that the public and Congress have for biomedical research will help us. We're actually increasingly tied to what [Senator] Barbara Mikulski [D-Md.] calls our national goals. It's easier and easier to see the connection between chemistry and even certain components of physics, and certainly biology, to improvement of health.

**SGR.** Is there too much emphasis in politics today on the direction and utility of science?

**Varmus.** There was a time when there would be great pride here that we're not really connected to any national goals. We're just accumulating knowledge which other people will then translate. I'm at heart a purist, but being in Washington at this time, when everyone is fighting for every dollar, I'm perfectly prepared to make the linkage with that. I think we can make it in the way that Barbara Mikulski makes on her best days, when she talks about NIH working under a large tent, and that large tent is the drive to improve the nation's health. We've always asked our investigators to say what is the significance of this work. Why are you asking the government to support it? By god, it's not hard to do that.

**SGR.** Apart from money, what are the big problems here?

**Varmus.** It's not just money. It's money combined with downsizing. I'm a great supporter of the National Performance Review [headed by Vice President Gore, often referred to as reinventing government]. It's one of the most innovative things in the current Administration, and it's a great way to think about government. But there are two things I'm worried about. One is preserving what the [Gore] report calls "islands of excellence." NIH is an island of excellence in the government. And if it's not respected as such, if it's treated like one among equals, we're going to ruin it. The second thing is that if you try to do reduction in force before you streamline your administrative procedures, you get into trouble. That's what I'm worried about.

It's very easy to take a pencil and a table of numbers and project reduction in force. It's just as easy to do it at NIH as anywhere else. But, the reductions in FTE's [full-time-

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## ... Rethinking the Peer-Review System at NIH

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equivalent employees] have been targeted particularly at the upper levels, where in most agencies or departments you'd be attacking a lot of upper-middle-level bureaucrats who perhaps don't have the most important tasks. But at NIH, those folks have a terribly important task. They're independent scientists running a laboratory, or a scientist who now is a grants manager with a portfolio of grants out in the extramural community. And reducing those folks, until you have some other way to do their business, which I don't foresee, means that you're cutting programs.

**SGR.** *Why should an island of excellence that has broad public support, and everybody would agree an essential mission, be downsized?*

**Varmus.** Government gets its directives and the Departments are told to reduce their force by a certain number. The tendency is just to level it out—everyone shares the pain.

**SGR.** *Intramural, how much downsizing is required?*

**Varmus.** It's in the range of 15 percent overall. That's people. Actually, the budget is not going to go down that much. It's hard to say what the budget is going to be, but our intention in the intramural program is that it will remain around 11 percent of the total NIH budget. That, of course, could be influenced by things like our need to rebuild the Clinical Center and by other concerns. We're going to face a reduction in GS 14s, 15s, and SESs [Senior Executive Service employees], something of the order of 10 percent.

**SGR.** *Will the science be better as a result—leaner, more productive?*

**Varmus.** I think we can make our administrative processes leaner. I just had a retreat of institute directors, scientific directors part of the time, and people from the executive offices, and quite a few others who are involved with some of these problems. We talked about how to do the downsizing and how to do the streamlining. There were a lot of good ideas put forward that we now are paying a lot of attention to. Some of these may seem fairly trivial, but actually they're very important. For example, instead of having every institute do procurement, have some centers of procurement, have them compete against each other, and someone who does it well will become the focal point for a lot of activity and their office will grow and we'll have fewer personnel doing more procurement. Improved administrative practices—having a better computer network, having the ability to do certain things on credit cards by computer ordering, reducing paperwork.

All these things are administrative changes that would have seemed boring to me last year, but now it seems the way to make this whole program work more efficiently, and put our money in science and not into the administrative tasks.

**SGR.** *Bob Gallo [National Cancer Institute] recently said [SGR, September 15] that topflight senior scientists are quitting NIH in unusually large numbers. Is that so?*

**Varmus.** No. There's always been attrition from NIH at

that level, because, frankly, one of the problems we have at NIH is salary limitation. And senior biomedical scientists of any kind, but especially the MDs, can command a much higher salary on the outside. Some of them, at the age of middle 40s, may be faced with the prospect of being able to take retirement from the Public Health Service and they may be faced with the difficulty of supporting kids who are going through college. That's a challenge.

**SGR.** *Does the downsizing extend to people outside of NIH who are receiving grants?*

**Varmus.** No, it's strictly inhouse. Now obviously, our extramural scientists are influenced by the size of our budget and the number of grants we can give out. And that brings us into a whole other arena of reinvention that Wendy Baldwin [Director of Extramural Research] and I have been very excited about. And that's trying to improve the peer-review process. I'm hesitant to talk about this in too-glowing a manner, because when I do, people say I'm trying to cover up the fact that we don't have enough money for research, I'm covering up my inability to increase the budget. But we've got to face a few fairly brutal facts. The most brutal, of course, is that the Congress has imposed spending caps on discretionary budgets, and we're not going to see a huge increase—that's all there is to it—not for two or three or four years.

**SGR.** *Every attempt to change the peer-review system runs into some constituency worrying it's going to be short-changed. For example, if you use the track record for awarding grants, younger people and minority-group members complain that they will fail in such a system.*

**Varmus.** We had a "reinvention" roundtable on peer review on July 14, and I think the lowest marks were given to the suggestion of doing retrospective review. I think all review involves some element of review of the career. Even if it's a new investigator, you look at how he did as a postdoc, how she did as a graduate student. But, the NIH system is ultimately going to be based on the proposal—mainly. I'm more concerned that the criteria by which we evaluate proposals are appropriate, because in times of fiscal stringency, the tendency is to look at things that are going to be productive, as opposed to imaginative or revolutionary.

And I think we need to spend a little more time thinking about how we make up our priority scores. There was a second meeting on peer review, about two weeks ago, sponsored by NIH in conjunction with the American Society of Cell Biology. One of the things that was discussed was the question of what ingredients go into making up a priority score, what's being judged. Many people are not thinking explicitly about how much they're taking into consideration past productivity, imagination, preliminary results, utility or applicability, or the kind of science that's being proposed.

**SGR.** *Would things come out very different if these were taken into consideration in scoring applications? The people getting the grants now are presumably superior people.*

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## ... Denies He's Cool to Social, Behavioral Sciences

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**Varmus.** I hope that's the case.

**SGR.** If you rejigger the system, would some of the people coming out on top now fall by the wayside?

**Varmus.** We're not so much concerned about those who are at the very top. What we're concerned about is getting fairness in that middle range, around the so-called funding limit. What troubles me is the possibility that some of the most important grant applications are falling just below the pay line, and that what's getting ahead are safer grants. I don't know if that's the case, but I think we ought to encourage our peer reviewers to think very carefully about how they're making their decisions.

**SGR.** Your House Appropriations Committee report says that many of your rejected applicants seem to be finding money one way or another [SGR, September 15: "On R&D Items Big and Small, Congress Gushes With Advice"].

**Varmus.** I don't know that there's a strong basis to say that. I'm not contesting it. In fact, I propose that we ought to do some kind of survey to find out how people are actually supporting themselves. The tendency for any single agency is to examine only those people who are going through that system. I think we ought to go out to a series of departments in different kinds of schools, different size and quality, different modes of support, state versus private, and poll all the faculty—find out how they're surviving. It could be a very useful survey. I don't think it's been done.

**SGR.** The social and behavioral sciences feel you don't appreciate them.

**Varmus.** That's a gross misstatement. They may think I don't appreciate them. You know why they think it? This is one of the products of media attention that is quite unfortunate. I made one comment to Natalie Angier [of *The New York Times*], which, if read carefully, does not at all mean what that community took it to mean. [Published November 23, 1993, the article quoted Varmus as saying, "And while I'm trying to learn more about behavioral science, I must say that I don't feel I get tremendous intellectual stimulation from most of the things I read."]

People in certain scientific groups that have not traditionally felt terribly well served or deeply appreciated by NIH are always looking for something of symbolic value, and they want lip service of a certain kind. What I said on that occasion was that I consider the behavioral aspects of medicine extraordinarily important, and that I myself am an addict about things that would have to be construed as behavioral and preventive strategies in managing my own health—for diet, exercise, even mood control at a certain level. And organizing my day so I don't get stressed, and so forth.

But I said that from whatever reading I've done, and I admit that it's probably more limited in behavioral science than it is in genetics, that I see more definitive, exciting discoveries being made in molecular genetics these days than I do in behavioral sciences. Since then, I've had many people

in the behavioral community—those who are constructive as opposed to those saying you're just another hard-science type who can't appreciate the subtleties of behavioral and psychological science—come to me with what they consider to be their favorite papers. That's what I always do when I meet someone who's from that community. I say, show me the best stuff and I'll read it. And I've seen some things I think are pretty interesting.

**SGR.** Intellectually on a par with molecular biology?

**Varmus.** I'm not sure that's a fair way to put it. I find some of it extremely intriguing. I wouldn't say the intellectual rigor is the same. But then, what is intellectual rigor? Sometimes you can argue that there's a high degree of a certain kind of rigor to get a nucleotide sequence, because it's precise. But it doesn't take too much thought to say I've got a cDNA and I'll sequence it. And you could say some of the behavioral stuff that I've been shown is quite imaginative and shows a certain flair for trying to think of an original way through a problem that's not quite ready for the kind of analysis that molecular genetics affords.

**SGR.** The behavioral and social scientists feel they have an enormous amount to contribute, but that it hasn't been recognized by the people who control the money.

**Varmus.** But you've got to realize that we do have a very big investment in behavioral science here. It depends how you define behavioral science. After all, there's behavioral genetics and then there's stuff that's from a rather different perspective. And we have, no matter how you cut it, at least a billion dollars invested. A very large segment of our AIDS budget is behavioral, as it should be, because the one way you can avoid AIDS is by changing behavior. So, I would say it's a misconstruction to say that we don't have a big investment in that area.

**SGR.** When your own Advisory Council to the Director of NIH discussed a report on violence research [June 2], the attitude of several of the panelists was extremely negative. They said they hadn't seen anything to indicate such research could reduce violence.

**Varmus.** I think this comes back to a more fundamental issue about how you plead for more money and more attention for your brand of science. I'm someone who feels very excited about a scientific opportunity, by having a new method that shows promise of making real discoveries, revelations. And I know there are lots of problems out there. I know there are lots of so-called gaps. Some people around here are very fond of talking about gaps in our knowledge—science is a process of gap filling. That's not what science is about. Science is about seeing an interesting question that you now have the power to solve. That's when science works. And to simply say that we have big unsolved problems, and therefore we must spend a certain amount of money is not the way we'll ever do business. Just as it's not appropriate to say that we should be spending on disease in proportion to the mortality rate. It doesn't make sense.

## A Few Gains, Some Losses in '95 Science Budgets

Congress was relatively kind to science in appropriating money for the new fiscal year, 1995, which began October 1. But in these tough times, kindness often works out to standing still, which was the fate of many R&D budgets when inflation is factored in. Some lost ground by any measure.

With almost all appropriations bills completed for the new year, the prize for growth—rare this year—goes to the National Institute of Standards and Technology (NIST), the politically popular 1988 reincarnation of the venerable National Bureau of Standards. Ignored by Reagan and poorly treated by Bush, NIST has become a major channel for the Clinton drive to stimulate high-tech industry.

NIST came out of the Congressional session with \$855 million, an increase of 64 percent over last year's budget. The White House wanted even more—\$935 million—but no one is complaining. Within the NIST budget, the big gainer was NIST's Advanced Technology Program, which finances multi-company research programs focused on commercially interesting problems. ATP received \$431 million for 1995, an increase of 116 percent.

Elsewhere, the budget returns were far less sparkling. The National Institutes of Health goes from \$10.9 billion to about \$11.3 billion, which works out to an inflationary loss by the reckoning of biomedical economics. A big problem for NIH is the quietly held belief at the White House that biomedical research is amply funded and does not require a major increase. That's the thinking where it counts, at the Office of Science and Technology Policy, science advisor to the purse-holding Office of Management and Budget.

At the White House, the same view of fiscal need applies to agricultural research, which, overall, has been declining in recent years. The Agricultural Research Service got a bit of an increase, rising from \$728 million to \$740 million. But the Cooperative State Research Service suffered a big loss, dropping from \$495 million to \$433 million. The research budget for the Forest Service went from \$193 million to \$200 million.

The Department of Energy's General Science and Research Fund, still reeling in the budget tables from the demise of the Superconducting Super Collider, shows up in 1995 for a 39 percent drop from its 1994 appropriation, which included \$640 million for the SSC. DOE's high-energy physics program, which was segregated from SSC finance, hasn't reaped a bonanza from the termination of the separate account for the big machine. In 1994, high-energy physics received \$628 million; in the new year, it's due for \$647 million, a 3 percent increase. Nuclear physics fared worse, dropping from \$353 million last year to \$335 million—down 5.3 percent.

DOE's Energy Supply R&D budget was another loser on the inflationary scale, rising by only 2.8 percent, from \$3.224 billion to \$3.315 billion. Within that total, basic energy science fell by 6.8 percent, from \$802 million to \$747 million. University and Science Education fared better,

rising by 13 percent, but the sums involved are relatively small—\$58 million last year, \$66 million this year.

The gross numbers for the National Science Foundation are favorable, but they're complicated by Congressional wrestling with the White House. NSF's budget total for 1995 is \$3.361 billion, \$343 million, or 11.4 percent, above last year's figure. But under pressure from academic constituents who need money for lab buildings and equipment, Congress concentrated most of the growth in expanded programs for facilities, up from \$110 million to \$250 million, and in the category of major research equipment, up \$52 million to \$126 million. Thus, \$214 million of the increase is tied to equipment and buildings. But the building money can't be spent unless the White House agrees to seek another \$250 million for facilities in fiscal 1996. Up to this point, the Administration has been reluctant to take on a program for which national demand is estimated in the many billions.

NSF's research category did pretty well, receiving a 14 percent increase, for a total of \$2.2 billion. And Education and Human Resources, always a Congressional favorite, went up by 6.4 percent, for a total of \$606 million.

The Geological Survey drops from \$585 million last year to \$572 million, and the National Biological Survey got \$167 million, \$1 million less than last year.

## Job Changes & Appointments

**E. William Colglazier**, head of the Office of International Affairs at the National Academy of Sciences, has been appointed Executive Officer of the NAS and its operating arm, the National Research Council. He succeeds **Philip M. Smith**, who retired in June after over 12 years in the dual posts and prior service at the White House Science Office. Dividing his time between Washington and Santa Fe, Smith is handling several projects for the Academy.

**Barbara Culliton**, Washington-based Deputy Editor of the British journal *Nature*, has been appointed Editor-in-Chief of a forthcoming monthly journal, *Nature Medicine*, scheduled to begin publication in January, with offices in Washington. Both journals are published by the British Macmillan Magazines, along with *Nature Genetics* and *Nature Structural Biology*. An ad for *Nature Medicine* says it "Bridges the gap between molecular medicine and clinical medicine."

**M. Grant Gross**, Director of the Division of Ocean Sciences at the National Science Foundation, has been appointed Executive Director of the Chesapeake Research Consortium, succeeding **Joseph Mihursky**, who returned to the University of Maryland in June after completing a six-year term in the post. The Consortium, organized to help clean up Chesapeake Bay, consists of Johns Hopkins, the University of Maryland, the Smithsonian, William & Mary, the Academy of Natural Sciences, and Old Dominion University. Offices are on Solomons Island, Md.

# In Print

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**Text of testimony and supplementary materials from the Science Subcommittee of the House Science, Space, and Technology Committee:**

**HR 3532 The Antarctic Environmental Protection Act** (Committee No. 117, GPO Stock No. 552-070-166-71-8; 117 pp., \$4.75), from a hearing in February to implement the Protocol on Environmental Protection to the Antarctic Treaty, with witnesses from the State Department, NSF, NOAA, EPA, and other agencies. The legislation remains on a large pile of unfinished business as adjournment approaches.

**Internet Security** (Committee No. 128, GPO Stock No. 552-070-168-01-0; 138 pp., \$5), from a hearing in March; witnesses from Carnegie Mellon, the FBI, the Internet Society, NIST, and several computer-security organizations.

Order from: USGPO, Congressional Sales Office, 710 N. Capitol St., Room A-156, Washington, DC 20402; tel. 202/512-1808; fax 202/512-2250.

**The Measurement of Scientific and Technological Activities: Proposed Standard Practice for Surveys of Research and Experimental Development, Frascati Manual 1993** (262 pp., \$58), from the Organization for Economic Cooperation and Development (OECD), Paris-based consortium of 24 industrially advanced nations, recommendations for uniform standards for statistical data on national R&D activities—the first new edition of this work in a decade. According to an announcement from OECD, the topics covered include “tracing the globalization of R&D,” and measuring defense and environmental R&D and the research content of software development. Interest in the accuracy and comparability of national R&D statistics arises from the venerable tactic of citing foreign figures as evidence of a hometown lag—as was done in the Clinton Administration’s science-policy declaration, *Science in the National Interest*.

Order from: OECD Publications and Information Center, 2001 L St. NW, Suite 700, Washington, DC 20036-4910; tel. 202/785-6323; fax 202/785-0350. Also available from booksellers and OECD offices in many major cities around the world.

**From the Congressional Office of Technology Assessment (OTA):**

**Information Security and Privacy in Network Environments** (GPO Stock No. 052-003-01387-8; 244 pp., \$16), an examination of legal, technical, and other issues involved in developing security methods for unclassified information in electronic transmissions, focusing on traditional privacy concerns versus the government’s insistence on a mandated “clipper chip” that would permit eavesdropping for law-enforcement purposes. The OTA report strongly urges open policy discussions in deciding on security techniques, noting “chronic public suspicions” about government intentions in this area. The study was requested by Senators John Glenn, Chairman of the Governmental Affairs Committee, and William Roth, ranking Republican on the Committee. Congress has also asked the National Academy of Sciences to

conduct a study of encryption, due in 1996. The advisory committee for the OTA study was chaired by Nancy M. Cline, Dean of University Libraries, Penn State; Joan Winston of the OTA staff was Project Director.

**Remotely Sensed Data: Technology, Management, and Markets** (GPO Stock No. 052-003-01385-1; 194 pp., \$13), says the torrents of data collected from space have great commercial as well as scientific and technical value, but warns that government programs in this area are scattered and poorly funded. Among OTA’s gingerly offered suggestions: “Congress may wish to instruct federal agencies to develop a centrally coordinated ‘metadata set’ that would provide a complete listing of the sources and types of remotely sensed data in different US facilities.” The report was requested by several House and Senate committees. Rodney Nichols, CEO, New York Academy of Sciences, chaired the advisory panel; Ray A. Williamson was Project Director.

**Proliferation and the Former Soviet Union** (GPO Stock No. 052-003-01384-3; 92 pp., \$6.50), fifth publication in OTA’s series on preventing the spread of weapons of mass destruction. This one urges the US to intensify its efforts in the former Soviet Union, particularly by subsidizing researchers to keep them from mischief and providing incentives for their governments to impose strict safeguards. The report was requested by Senator Glenn, who seems to be in the lead as OTA’s top customer. Previous reports in the proliferation series are listed in this publication. James F. Leonard, head of the Washington Council on Non-Proliferation, served as chairman of the study’s advisory panel after James E. Goodby resigned to become Chief US Negotiator for Safe and Secure Dismantlement of Nuclear Weapons. Gerald L. Epstein was Project Director.

Order from: New Orders, USGPO, PO Box 371954, Pittsburgh, Pa. 15250-7954; tel. 202/512-1800; fax 202/512-2250.

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# In Print

Official reports and other publications of special interest to the research community

(Copies of publications listed here are available from the indicated sources—not from SGR)

**Meeting the Nation's Needs for Biomedical and Behavioral Scientists** (162 pp., \$27, plus \$4.50 for shipping), from the fog-bound regions of scientific personnel forecasting, a landmark concession that techniques are lacking for producing reliable long-term predictions of demand—an affront to traditional science politics, which has customarily insisted that more is necessary. The report, from the National Academy of Sciences Committee on National Needs for Biomedical and Behavioral Research Personnel, is tenth in a series mandated by Congress in 1974 to help set the number of National Research Service Awards sponsored by NIH and the former Alcohol, Drug Abuse, and Mental Health Administration, since folded into NIH.

In decrying the frailty of standard forecasting techniques, the Committee acknowledges a new and heavy reliance on its Panel on Estimation Procedures, chaired by Michael Rothschild, Division of Social Sciences, UC San Diego. In scoffing at traditional fortune-telling exercises, the Panel says the “conceptual basis of current forecasting models is questionable,” adding: “They assume, in the simplest case, that student-faculty ratios are fixed and that the number of dollars required to support one scientist is fixed. This is, on its face, silly.”

While recommending increases in the number of stipends for several training categories, the report says the most urgent need is an increase in the size of the stipends. In an introductory letter, Academy President Bruce Alberts says the Panel on Estimation Procedures is preparing a report for release this year on “the more general matter of mathematical approaches to the estimation of ‘need.’” Over a score of tables in the report provide data on biomedical finance, education enrollments, jobs, etc. The full Committee was co-chaired by Ira J. Hirsh, Washington University, Central Institute for the Deaf, retired, and John D. Stobo, Department of Medicine, Johns Hopkins University.

**From the Institute of Medicine, health-policy arm of the Academy: Growing Up Tobacco Free: Preventing Nicotine Addiction in Children and Youths** (306 pp., \$24.95, plus \$4.50 for shipping), a wide-ranging review of the literature on youth and tobacco, providing fine detail but, in the nature of the project, nothing new. This also applies to the recommendations, which include: “Parents should clearly and unequivocally express disapproval of tobacco use to their children, and, if smokers themselves, should quit smoking.”

Since no denunciation of the noxious weed can be too much, this compendium is welcome, too. But its arrival at this advanced stage in the anti-tobacco wars does invite wonder—especially since the preface says the idea for this project began perking at the IOM way back in March 1991,

when it was declared one of the “highest priorities” of the IOM’s Board on Behavioral Sciences and Mental Disorders.

So, staked by the misguided wealth of the Robert Wood Johnson Foundation and several tag-along benefactors, for a grand total of \$650,000, here is the result, in the tradition of arriving safely late on the battlefield to shoot the wounded. Among Washington policy-research organizations, the IOM has a good grip on the prize for lethargy. In the just-fizzled battle over health-care reform, it was close to invisible.

**Order from:** National Academy Press, 2101 Constitution Ave. NW, Box 285, Washington, DC 20055; tel. 1-800/624-6242; in the Washington, DC, area, 202/334-3313.

**From the General Accounting Office (GAO), investigative agency for the Congress, all reports without charge:**

**Federal Employment: How Government Jobs Are Viewed on Some College Campuses** (GAO/GGD-94-181; 57 pp.)—with disdain, according to the GAO, which surveyed students and placement staff at 13 schools at the request of Senator John Glenn, Chairman of the Governmental Operations Committee. “As a rule,” the report states, “the placement officials we interviewed said graduates of their schools had little interest in working for the federal government.” The reasons cited: “(1) low, non-competitive salary; (2) burdensome and lengthy hiring process; (3) inadequate and ineffective federal recruiting; (4) poor image of government work and employees; and (5) lack of information on federal job availability.” Schools surveyed were: Cal State, Long Beach; Emory, Georgia Institute of Technology, Georgia State, Macalester College, Marquette, Spelman College, University of Minnesota, University of Richmond, USC, University of Virginia, University of Wisconsin-Milwaukee, Virginia Commonwealth.

**Nuclear Waste: Foreign Countries’ Approaches to High-Level Waste Storage and Disposal** (GAO/RCED-94-172; 59 pp.), reviews nuclear-disposal plans and programs in Germany, Sweden, Switzerland, France, Canada, Japan, and the UK, and finds that, as in the US, they have been “profoundly affected” by public opposition. The report notes, however, that, in contrast to the US, the other countries have emphasized interim facilities that can “hold all of their waste for decades,” and therefore they are under no time pressure to develop eternal geologic repositories. The report was requested by Senator Richard H. Bryan, Democrat of Nevada, site of Yucca Mountain, Congress’s choice for the big dump. The GAO notes, however, that the Department of Energy’s hoped-for 1998 opening date for Yucca has slipped to 2010, “and that date is optimistic.”

**Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach** (GAO/RCED-94-111; 87 pp.), notes White House plans to spend \$610 million on ecosystem management in the Pacific Northwest, south Florida, and the Anacostia River, Md., and cautions that coordination and detailed planning are lacking among the several federal agencies involved.

**Order from:** USGAO, PO Box 6015, Gaithersburg, Md. 20884-6015; tel. 202/512-6000; fax 301/258-4066.

(Continued on Page 7)



